What is claimed is:

1. A recombinant bistable genetic toggle switch that is capable of being stable in a first state or in a second state, the toggle switch comprising:

(a) a first nucleic acid construct comprising a first constitutive promoter operably associated with a first gene encoding a first repressor protein; and

(b) a second nucleic acid construct comprising a second constitutive promoter operably associated with a second gene encoding a second repressor protein,

wherein the second repressor protein, when produced, is capable of repressing transcription from the first promoter, and wherein repression of the first promoter by the second repressor protein is reducible by a first switching agent, and

wherein the first repressor protein, when produced, is capable of repressing transcription from the second promoter, and wherein repression of the second promoter by the first repressor protein is reducible by a second switching agent.

2. The toggle switch of claim 1, wherein repression of the first promoter by the second repressor is reduced by the first switching agent such that transcription of the first gene by the first promoter is derepressed thereby causing the toggle switch to be in the first state.

3. The toggle switch of claim 2, wherein transcription of the first gene by the first promoter is derepressed by transient application of the first switching agent.

4. The toggle switch of claim 1 or 2, wherein repression of the second promoter by the first repressor is reduced by the second switching agent such that transcription of the second gene by the second promoter is derepressed thereby causing the toggle switch to be in the second state.

5. The toggle switch of claim 4, wherein transcription of the second gene by the second promoter is derepressed by transient application of the second switching agent.

6. The toggle switch of claim 1, wherein the first construct further comprises a third gene encoding a protein of interest, wherein the third gene is in operable association with the first promoter.

7. The toggle switch of claim 6, wherein transcription of the third gene increases upon application of the first switching agent.

8. The toggle switch of claim 1 or 6, wherein the second construct further comprises a fourth gene encoding a protein of interest, wherein the fourth gene is in operable association with the second promoter.

9. The toggle switch of claim 8, wherein transcription of the fourth gene increases upon application of the second switching agent.

10. The toggle switch of claim 1, wherein the first and second constructs are disposed within a single contiguous nucleic acid sequence.

11. The toggle switch of claim 1, wherein the first constitutive promoter, the second constitutive promoter or both the first and second constitutive promoters are each in operable association with an operator.

12. A host cell harboring the toggle switch of claim 1.

13. The host cell of claim 12, wherein the host cell is a prokaryotic cell.

14. The host cell of claim 13, wherein the prokaryotic cell is *Escherichia coli*.

15. The host cell of claim 12, wherein the host cell is a eukaryotic cell.

16. The host cell of claim 15, wherein the eukaryotic cell is a mammalian cell or a yeast cell.

17. A method of alternating transcription from first and second promoters in a host cell, the method comprising the steps of:

(i) providing a host cell harboring a recombinant bistable genetic switch comprising:

(a) a first nucleic acid construct comprising a first constitutive promoter operably associated with a first gene encoding a first repressor protein; and

(b) a second nucleic acid construct comprising a second constitutive promoter operably associated with a second gene encoding a second repressor protein,

wherein the second repressor protein, when produced, is capable of repressing transcription from the first promoter, and wherein repression of the first promoter by the second repressor protein is reduced by a first switching agent, and

wherein the first repressor protein, when produced, is capable of repressing transcription from the second promoter, and wherein repression of the second promoter by the first repressor protein is reduced by a second switching agent; and

(ii) providing either the first switching agent to derepress transcription of the first gene by the first promoter or the second switching agent to derepress transcription of the second gene by the second promoter.

18. The method claim 17, comprising the additional step of providing either the second switching agent after the first switching agent or the first switching agent after the second switching agent.

19. The method of claim 17 or 18, wherein the first switching agent is provided transiently.

20. The method of claim 17 or 18, wherein the second switching agent is provided transiently.

21. The method of claim 17, wherein in step (i) the first construct further comprises a third gene encoding a protein of interest, wherein the third gene is in operable association with the first promoter.

22. The method of claim 21, wherein in step (ii) the provision of the first switching agent increases transcription of the third gene.

23. The method of claim 17, wherein in step (i) the second construct further comprises a fourth gene encoding a protein of interest, wherein the fourth gene is in operable association with the second promoter.

24. The method of claim 23, wherein in step (ii) the provision of the second switching agent increases transcription of the fourth gene.

25. The method of claim 17, wherein in step (i) the first and second constructs are disposed within a single contiguous nucleic acid sequence.

26. The method of claim 17, wherein the first constitutive promoter, the second constitutive promoter or both of the first and second constitutive promoters are each in operable association with an operator.

27. The method of claim 17, wherein the host cell of step (i) is a prokaryotic cell.

28. The method of claim 27, wherein the prokaryotic cell is *Escherichia coli*.

29. The method of claim 17, wherein the host cell of step (i) is a eukaryotic cell.

30. The method of claim 29, wherein the eukaryotic cell is a mammalian cell or a yeast cell.